

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* ARNAB DAS, FAROOQ ULLAH KHAN, and,  
SANJIV NANDA

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Appeal 2007-0843  
Application 09/725,393  
Technology Center 2100

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Decided: April 20, 2007

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Before ALLEN R. MACDONALD, JEAN R. HOMERE, and  
ST. JOHN COURTENAY III, *Administrative Patent Judges*.

COURTENAY, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1-14 and 16-24. Claim 15 has been cancelled.

THE INVENTION

The disclosed invention relates generally to wireless communication systems and, more particularly, to data transmission over wireless

communication systems. The disclosed invention is a method of sub-packet adaptation based on the data rate. In particular, the size of a sub-packet is adapted to the data rate at which the sub-packet is to be transmitted. The disclosed invention further adapts the sub-packet size to the data rate in a format that would allow such size-adapted sub-packet to be soft combined with another sub-packet of a same or different size. The size-adapted sub-packet may be transmitted prior to or after the other sub-packet. In one embodiment, the disclosed invention comprises the steps of channel coding an encoder packet to produce a channel-coded encoder packet; and puncturing and/or repeating the channel-coded encoder packet to produce an encoder sub-packet having a size based on a size of the encoder packet and a data transmission rate at which the encoder sub-packet is to be transmitted (Specification 1-3).

Representative claim 1 is illustrative:

1. A method of transmitting data comprising the steps of:  
channel coding an encoder packet to produce a channel coded encoder packet; and  
puncturing and/or repeating the channel coded encoder packet to produce a first encoder sub-packet having a first size based on a size of the encoder packet and a first data transmission rate at which the first encoder sub-packet is to be transmitted, wherein the first data transmission rate is different from and based on a data rate for transmitting the first encoder subpacket indicated in a first rate indication message from a receiver.

#### THE REFERENCES

The Examiner relies upon the following references as evidence of unpatentability:

Buchholz	US 5,337,313	Aug. 9, 1994
Tiedemann	US 5,914,950	Jun. 22, 1999
Bruckman	US 2002/0051466 A1	May 2, 2002

Applicant's Admitted Prior Art (AAPA), *see* Specification, "BACKGROUND OF THE RELATED ART" section, p. 1, l. 14 through p. 2, l. 23.

### THE REJECTIONS

The following rejections are on appeal before us:

1. Claims 1-5, 14, and 16-23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the teachings of Bruckman in view of AAPA, and further in view of Tiedemann.
2. Claims 6-13 and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the teachings of Bruckman in view of AAPA, and further in view of Tiedemann, and further in view of Buchholz.

Rather than repeat the arguments of Appellants or the Examiner, we make reference to the Briefs and the Answer for the respective details thereof.

### OPINION

Only those arguments actually made by Appellants have been considered in this decision. It is our view, after consideration of the record before us, that the evidence relied upon supports the Examiner's rejection of the claims on appeal. Accordingly, we affirm.

### Claims 1-5, 14, and 16-23

We consider first the Examiner's rejection of claims 1-5, 14, and 16-23 as being unpatentable over the teachings of Bruckman in view of AAPA, and further in view of Tiedemann. Since Appellants' arguments with

respect to this rejection have treated these claims as a single group which stand or fall together, we will select independent claim 1 as the representative claim for this rejection because it is the broadest independent claim in this group. *See* 37 C.F.R. § 41.37(c)(1)(vii)(2004).

Appellants argue that Bruckman fails to teach or suggest at least puncturing and/or repeating channel coded packets to produce a first sub-packet based on a size of the encoder packet, as set forth in claim 1. Appellants argue that Bruckman at most discloses the fragmenting (i.e., dividing) of packets into pieces based on a transmission rate over a channel, where the optimal fragment length is based on considerations of overhead and maximum permitted delay. Appellants argue the actual size of the datagram received at the transmitter front end merely triggers the fragmenting of a received datagram and is not used in determining the size of the packet fragments. Appellants acknowledge that when an input packet from “sources 26” exceeds a determined fragment size, “fragmenter 28” divides the packet for transmission into multiple fragments (*see* Bruckman, ¶ 0026, ll. 9-11). Nevertheless, Appellants conclude that the input packet size is not used in determining the size of the packet fragments (Br. 15-16).

In the Reply Brief, Appellants further argue that the fragmenting of Bruckman does not constitute the recited “puncturing” (claim 1). Appellants argue the claimed “puncturing” involves dropping bits (*id.*). Appellants assert that Bruckman merely teaches fragmenting or slicing an input fragment into multiple smaller fragments (Reply Br. 3).

In response, the Examiner agrees that the size of the sub-packets in Bruckman is based on the transmission frequency. However the Examiner

maintains that the size of Bruckman's subpackets (i.e., fragments) is additionally based on the size of the input encoder packet. The Examiner points out that when Bruckman's input packet does not exceed the determined fragment size, then the size of the output packet is *based entirely on the size of the input packet* (Answer 6-7, emphasis added).

Appellants further argue that the cited combination of references does not teach or suggest "wherein the first data transmission rate is different from and based on a data rate for transmitting the first encoder subpacket indicated in a first rate indication message from a receiver," as set forth in claim 1 (Br. 17-20).

The Examiner disagrees. The Examiner argues that Tiedemann teaches the receiver [remote station 6] transmits a maximum supportable transmission rate to the transmitter [cell] (col. 11, ll. 44-52). The Examiner also points to Tiedemann's disclosure at Fig. 8, step 224: i.e., "Assign the Scheduled Rate Based on the Max Transmission Rate, Preferred Rate, and/or Requested Rate (from Remote Station)." In particular, the Examiner notes that the "Scheduled Rate" is based on three factors of which the "Requested Rate" is only one (Tiedemann, Fig. 8, step 224). Therefore, the Examiner concludes that the breadth of Tiedemann's disclosure teaches an embodiment where the actual first data transmission rate is *different from and based on* the "Requested Rate,"<sup>1</sup> i.e., where Tiedemann's "Requested Rate" corresponds to the recited "data rate for transmitting ... indicated in a first rate indication message from a receiver." (Answer 8-9).

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<sup>1</sup> See Tiedemann's "Requested Rate" (col. 11, ll. 44-45).

Lastly, Appellants argue that the Examiner has impermissibly used hindsight in formulating the rejection (Br. 21).

The Examiner disagrees. The Examiner argues that the cited combination would have enabled multiple receivers and/or wireless communications, as taught by Tiedemann (Answer 9).

“[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability.” *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. *See In re Kahn*, 441 F.3d 977, 987-988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006); *In re Young*, 927 F.2d 588, 591, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991).

We begin our analysis by broadly but reasonably construing the recited term “puncturing” in a manner consistent with the Specification (claim 1). “[D]uring examination proceedings, claims are given their broadest reasonable interpretation consistent with the specification.” *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). When we look to the Specification for *context*, we find no support for Appellants’ argument that “puncturing” requires *dropping bits* (see Reply Br. 3). In contrast, the Specification merely discloses puncturing and/or repeating the channel coded encoder packet to produce an encoder sub-packet having a size based on a size of the encoder packet and a data transmission rate at which the encoder sub-packet is to be transmitted (Specification p. 1, l. 32 through p. 2, l. 2). The Specification further discloses that puncturing and/or repetition techniques are used to obtain

different size encoder sub-packets wherein the original encoder packet may be derived from each of the encoder sub-packets (Specification, p. 6, ll. 18-20). Therefore, we find Appellants are reading limitations into the claims (i.e., that “puncturing” requires dropping bits). We conclude the scope of the recited “puncturing” limitation broadly but reasonably encompasses Bruckman’s input packets that are broken up or fragmented (i.e., punctured) into multiple fragments or subpackets (*see* Bruckman, ¶ 0026).

Thus, we find the argued limitations <sup>2</sup> broadly but reasonably encompass Bruckman’s teaching that an input packet exceeding a determined fragment size triggers the operation of “fragmenter 28” that divides the packet into multiple fragments where the fragment size is based on the variable rate of transmission (¶ 0026). In particular, we agree with the Examiner’s observation that Bruckman’s output fragments (i.e., sub-packets) are based *entirely on the size of the input packet when the input packet does not exceed the determined fragment size*. We note that Bruckman also teaches the size of the fragments is based on the variable rate of transmission over the data channel (¶ 0026). Therefore, we agree with the Examiner that Bruckman teaches and/or suggests: “puncturing and/or repeating the channel coded encoder packet to produce a first encoder sub-packet having a first size based on a size of the encoder packet and a first data transmission rate at which the first encoder sub-packet is to be transmitted” (claim 1).

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<sup>2</sup> “puncturing and/or repeating the channel coded encoder packet to produce a first encoder sub-packet having a first size based on a size of the encoder packet and a first data transmission rate at which the first encoder sub-packet is to be transmitted” (claim 1).

We further agree with the Examiner that Tiedemann teaches and/or suggests the argued limitations of: “wherein the first data transmission rate is different from and based on a data rate for transmitting the first encoder subpacket indicated in a first rate indication message from a receiver” (claim 1). As pointed out by the Examiner, we note that Tiedemann teaches the receiver (i.e., remote station 6) transmits a maximum supportable transmission rate to the transmitter (i.e., cell) (col. 11, ll. 44-52). We find this portion of Tiedemann teaches the instant claimed “first rate indication message from a receiver” where Tiedemann’s “remote station 6” corresponds to the claimed receiver (*see* Tiedemann, col. 11, ll. 44-45).

As also pointed out by the Examiner, we note that Tiedemann teaches the assigned “Scheduled Rate” is based on three factors: e.g., “Assign the Scheduled Rate Based on the Max Transmission Rate, Preferred Rate, and/or Requested Rate (from Remote Station)” *See* Tiedemann, Fig. 8, step 224, *also see* col. 12, ll. 1-3. Therefore, we find the breadth of Tiedemann’s disclosure teaches and/or suggests an embodiment where the actual first data transmission rate<sup>3</sup> is *different from and based on* a data rate for transmitting ... indicated in a first rate indication message from a receiver, where the recited “first rate indication message from a receiver” corresponds to Tiedemann’s “Requested Rate” (claim 1, *see also* Answer 8-9, *see also footnote 1 supra*).

#### Motivation

We do not agree with Appellants’ assertion that the Examiner has impermissibly used hindsight in formulating the rejection. We note that

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<sup>3</sup> *See* Tiedemann’s “Scheduled Rate,” Fig. 8, step 224, col. 12, ll. 1-3.



Bruckman, AAPA, and Tiedemann are each broadly directed to the telecommunications art and, more particularly, to methods of sending and receiving data on a telecommunications network. We specifically note that Tiedemann's CDMA system enables both voice and *data* communications between users (col. 1, ll. 19-21). Therefore, we find the cited references are analogous by virtue of being from the same field of endeavor as the instant invention (i.e., being broadly directed to data transmission over a telecommunications network). *See In re Kahn*, 441 F.3d 977, 987, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006) ("The analogous-art test requires that the Board show that a reference is either in the field of the applicant's endeavor or is reasonably pertinent to the problem with which the inventor was concerned in order to rely on that reference as a basis for rejection.") (internal citation omitted).

Furthermore, our reviewing court has recently reaffirmed:

[A]n implicit motivation to combine exists not only when a suggestion may be gleaned from the prior art as a whole, but when the 'improvement' is technology-independent and the combination of references results in a product or process that is more desirable, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient ... In such situations, the proper question is whether the ordinary artisan possesses knowledge and skills rendering him *capable* of combining the prior art references.

*DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1368, 80 USPQ2d 1641, 1651 (Fed. Cir. 2006) (emphasis in original).

Here, we find the ordinarily skilled artisan who possessed knowledge and skills relating to telecommunications networks would have been *capable of* combining Bruckman's dynamic packet fragmentation system with Tiedemann's CDMA network in the manner suggested by the Examiner for the purpose of realizing a *faster* and more *efficient* data communications network. Furthermore, we find Tiedemann explicitly discloses the advantage of assigning the maximum scheduled transmission rate that can be used by each remote station for high speed data transmission on the reverse link (col. 7, 29-32).

We need not reach the issue of whether the Examiner has established a proper motivation to combine Bruckman and AAPA under §103, because we find that Bruckman, as modified by Tiedemann, teaches or suggests all the limitations of representative claim 1, as discussed *supra*. We find that the teachings of AAPA are cumulative to Tiedemann and unnecessary to support the rejection. It is proper to affirm a rejection based upon the teachings of a lesser number of references than those relied upon by the Examiner. In affirming a multiple reference rejection under 35 U.S.C. § 103, the Board may rely on one reference alone in an obviousness rationale without designating it as a new ground of rejection. *In re Bush*, 296 F.2d 491, 496, 131 USPQ 263, 266-67 (CCPA 1961); *In re Boyer*, 363 F.2d 455, 458, n.2, 150 USPQ 441, 444, n.2 (CCPA 1966).

Therefore, for at least the aforementioned reasons, we conclude the Examiner has met the burden of establishing a *prima facie* case of obviousness. Accordingly, we will sustain the Examiner's rejection of

representative claim 1 as being unpatentable over Bruckman in view of Tiedemann.

Pursuant to 37 C.F.R. § 41.37(c)(1)(vii), we have decided the appeal with respect to claims 2-5, 14, and 16-23 on the basis of the selected claim alone. Therefore, we will sustain the Examiner's rejection of these claims as being unpatentable over Bruckman in view of Tiedemann for the same reasons discussed *supra* with respect to representative claim 1.

Claims 6, 7, 9-11, 13, and 24

We consider next the Examiner's rejection of claims 6, 7, 9-11, 13, and 24 as being unpatentable over the teachings of Bruckman in view of AAPA, and further in view of Tiedemann, and further in view of Buchholz. Since Appellants' arguments with respect to this rejection have treated these claims as a single group which stand or fall together, we will select dependent claim 10 as the representative claim for this rejection. *See* 37 C.F.R. § 41.37(c)(1)(vii)(2004).

Appellants argue that even if Bruckman, AAPA, Tiedemann, and Buchholz could be properly combined, Buchholz would not make up for the deficiencies of Bruckman, AAPA, and Tiedemann (Br. 21-22).

We see no deficiencies with respect to Bruckman as modified by Tiedemann, as discussed *supra*. We have found the teachings of AAPA are cumulative to Tiedemann and unnecessary to support the rejection, as also discussed *supra*. We note that Appellants have not presented any substantive arguments directed separately to the patentability of claims 6, 7, 9-11, 13, and 24. In the absence of a separate argument with respect to the dependent claims, those claims stand or fall with the representative

independent claim. *See In re Young*, 927 F.2d 588, 590, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991). Therefore, we will sustain the Examiner's rejection of these claims as being unpatentable over Bruckman in view of Tiedemann, and further in view of Buchholz for the same reasons discussed *supra* with respect to the rejection of independent claim 1 as being unpatentable over Bruckman in view of Tiedemann.

#### Claims 8 and 12

Lastly, we consider the Examiner's rejection of claims 8 and 12 as being unpatentable over the teachings of Bruckman in view of AAPA, and further in view of Tiedemann, and further in view of Buchholz.

Appellants argue the Examiner's alleged taking of "Official Notice" fails to provide the necessary motivation for incorporating what the Examiner considers as "well known" into the system disclosed by Bruckman (Br. 22).

Contrary to Appellants' arguments, we find the Examiner has not taken "Official Notice" in formulating the rejections of claims 8 and 12 (*see* Answer 5, *see also* MPEP § 2144.03). In contrast, the Examiner, as finder of fact, has found Bruckman teaches transmitting fragments based upon their individual transmission rates (*see* Answer 5). The Examiner has further found that Bruckman expressly teaches *modulating* the data (*see* Bruckman, ¶ 0028, i.e., "modems"). The Examiner points out that "modem" stands for modulator/demodulator (*see* Answer 5).

Therefore, we see no deficiencies with respect to Bruckman as modified by Tiedemann, as discussed *supra*. We have found the teachings

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of AAPA are cumulative to Tiedemann and unnecessary to support the rejection, as also discussed *supra*. Accordingly, we will sustain the Examiner's rejection of claims 8 and 12 as being unpatentable over Bruckman in view of Tiedemann, and further in view of Buchholz for the same reasons discussed *supra* with respect to the rejection of independent claim 1 as being unpatentable over Bruckman in view of Tiedemann.

#### DECISION

In summary, we have sustained the Examiner's rejection of all claims on appeal. Therefore, the decision of the Examiner rejecting claims 1-14 and 16-24 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

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AFFIRMED.

ELD

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